UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,470	03/20/2002	David Robert Diggins	025265-227	9637

21839 7590 12/09/2005

BUCHANAN INGERSOLL PC
(INCLUDING BURNS, DOANE, SWECKER & MATHIS)
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
CHAN, SING P	
ART UNIT	**PAPER NUMBER**
1734	

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/089,470	DIGGINS ET AL.	
	Examiner	Art Unit	
	Sing P. Chan	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *41-57 and 81-106* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *41-57 and 81-106* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 51and 52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 51, the claim recites "at least one of the first coating layer," but since there is only one first coating layer, it is unclear if there are other layers. For the purpose of examination, "wherein the first coating layer" will be assumed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 41-54, 81-85, 88-94, 97, 98, 102, and 103-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mase et al (U.S. 5,693,366) in view of Konishi et al (U.S. 5,462,806) and Soane et al (U.S. 5,733,483).

Regarding claims 41 and 103-106, Mase et al discloses a method of forming a plastic lens. The method includes providing a lens substrate, coating the surface of the

substrate with a primer layer comprising polyurethane (Col 5, lines 16-18), curing or drying the primer layer, coating the primer layer with a hard coat layer, i.e. abrasion resistant layer comprising silicone resins, which inherently includes polysiloxane resin, curing the hard coat. (Col 4, lines 1-62) Mase et al does not disclose the primer layer comprising (meth)acryl silane), coating the layers onto a mould in the reverse order and after forming the coating layers, filling the mould with lens forming material and curing and forming the lens. However, providing a primer layer comprising either a polyurethane or silane is well known and conventional as shown for example by Konishi et al. Konishi et al discloses a method of forming plastic lens. The method includes providing a primer layer comprising acrylic acid, vinyl acetate, polyester, silicone, polyurethane, or epoxy resins (Col 2, line 62 to Col 3, line 5) and includes a number examples of organosilicon compound for forming the primer layer (Col 4, line 37 to Col 5, line 49), which inherently includes any silane compound such as (meth)acryl silane.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide any material suitable as a primer such as polyurethane or silicone resin as disclosed by Konishi et al in the method of Mase et al, which provided any material for the primer layer, which are all equivalents. Mase et al as modified above is silent as to coating the layers onto a mould in the reverse order and after forming the coating layers, filling the mould with lens forming material and curing and forming the lens. However, coating the layers onto a mould in the reverse order and after forming the coating layers, filling the mould with lens forming material and curing and forming the lens are well known and conventional as shown for example by

Soane et al. Soane et al discloses a method of forming optical elements, i.e. lens. The method includes providing a mold and coating with the optical coating in the reverse order and the desired liquid optical material, which is a thermoset such as acrylate or mixture of acrylate and urethane (Col 8, lines 56-66) is supplied to the mold with a coupling agent layer, i.e. primer, comprising methacryloxypropyltrimethoxysilane (Col 6, lines 39-43), which is a methacryl silane, which with baking causes hydrolysis reactions to chemically bond, i.e. coreacting, to the other layers (Col 6, lines 26-26) and cured or solidified. (Col 4, lines 14-20, Col 5, line 61 to Col 6, line 12, and Col 8, lines 57-64)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a mold and coating the optical coating to the mold and injecting the liquid optical material into the mold and curing the material to form the coated lens as disclosed by Soane et al in the method of Mase et al as modified by Konishi et al to allow the transfer of optical coatings at a different location and time and reducing handling time and costs. (Col 2, lines 53-67)

Regarding claim 42, Mase et al is silent as to the first coating layer is applied to the casting face of the mould so as to completely cover the casting face. However, coating the first coating layer to the casting face of the mould so as to completely cover the casting face is well known and conventional as shown for example by Soane et al. Soane et al discloses the all the coatings are applied to the mold by spin coating or dipping, which completely cover the casting face. (Col 5, lines 40-47, Col 5, lines 54-60, Col 6, lines 39-43)

It would have been obvious to one of ordinary skill in the art at the time the invention was made coat the mold face completely as disclosed by Soane et al in the method of Mase et al provide a very uniform coating on the mold. (Col 4, lines 58-67)

Regarding claim 43, Mase et al discloses after the layer is cured, which is considered to be a film and is insoluble is immersed in a hard coat solution and is considered to be aberration-free. (Col 5, lines 16-30)

Regarding claim 44, Mase et al is silent as to the partial curing the coating. However, partial curing of the coating is well known and conventional as shown for example by Soane et al. Soane et al discloses coating and curing the coatings to the affective degree of crosslinking for storing and shipping for later use. (Col 10, lines 10-29)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to partially curing the coating as disclosed by Soane et al in the method of Mase et al to provide unreacted groups in the coating layer available for future crosslinking with the optical material. (Col 10, lines 27-29)

Regarding claim 45, Mase et al discloses the curing or drying is performed at 110°C to 130°C and 15 to 19 minutes. (Col 4, lines 1-10)

Regarding claims 46 and 47, coating layer as disclosed by Mase et al is considered to contain an unsaturated monomer range of 30 to 90% or 55% to 70%.

Regarding claims 48 and 49, Mase et al discloses the curing or drying is initiated by heating, ultraviolet light irradiation, and electron beam irradiation. (Col 4, lines 53-62)

Regarding claims 50-52, Mase et al discloses the primer layer is between the lens material and the hard coating and the hardcoating layer includes glycidoxypropyltimethoxysilane or methacroyloxypropyltrimethoxysilane, which is considered to form network by ring opening of the glycidoxy portion. (Col 4, lines 22-37)

Regarding claims 53 and 54, Mase et al discloses the coating includes a solvent and curing is considered to include removal of the solvent by heating. (Col 4, lines 44-62) And the second or primer layer is between the hardcoating or first layer and the lens material. (Col 2, lines 53-56 and Col 4, lines 21-24)

Regarding claims 81-85, Mase et al discloses additional coating of anti-reflection coatings after the primer and hard coating has been applied, (Col 4, line 65 to Col 5, line 8) which as modified by Soane et al will required the anti-reflection coating be applied prior to the first or hard coating has been applied.

Regarding claims 88-92, Mase et al discloses the hard coating is comprised polysiloxane resin, (Col 4, lines 21-38) but is silent as to the intermediate coating is comprised of methacryl silane and the lens material comprised of acrylate material. However, providing an intermediate coating comprising of methacryl silane such as methacryloxypropyltrimethoxysilane is well known and conventional as shown for example by Soane et al. Soane et al discloses a coupling agent, i.e. intermediate coating, comprising methacryloxypropyltrimethoxysilane and is considered to contain in the amount ranged from 30% to 100 by weight. (Col 6, lines 39-43) And the lens material includes thermoset resin such as acrylate resin or mixture of acrylate and urethane resin (Col 8, lines 56-66)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide methocryloxypropyltrimethoxysilane as the intermediate coating and lens material of acrylate resin as disclosed by Soane et al in the method of Mase et al to allow the transfer of optical coatings at a different location and time and reducing handling time and costs. (Col 2, lines 53-67)

Regarding claims 93 and 94, Mase et al discloses the hard coating has a thickness of 2 to 5 μm. (Col 4, lines 63-64)

Regarding claims 97 and 98, Mase et al discloses the primer or second coating has a thickness of 0.05μm to 5μm. (Col 4, lines 11-14)

Regarding claim 102, Mase et al discloses the hard coat layer includes colloidal silica with an average particle size of 50 to 200 /, which is 5 to 20 nm in diameter. (Col 4, lines 21-31)

5. Claims 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mase et al (U.S. 5,693,366) in view of Konishi et al (U.S. 5,462,806) and Soane et al (U.S. 5,733,483) as applied to claim 41 above, and further in view of LaLiberte et al (U.S. 4,273,809).

Mase et al as modified above by Soane et al is silent as to further post-cure the organic liquid material to ensure complete curing of the coating material. However, post-curing the optical material is well known and conventional as shown for example by LaLiberte et al. LaLiberte et al discloses a method of casting resin lenses. The method includes a post-curing the lens material by removing the partially cured lens from the

mold and heating in a post cure oven at approximately 200°F or 93.33°C for one to three hours to produce desirable final polymerization of the lenses. (Col 2, lines 17-44)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to remove the partially cured lens from the mold and heating to post cure the lens material to form the final polymerized lens as disclosed by LaLiberte et al in the method of Mase et al as modified by combination of references to allow ease separation of the lens material from the mold and to prevent breakage of the molds at separation. (Col 1, lines 9-19)

6. Claims 86, 87, 95, and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mase et al (U.S. 5,693,366) in view of Konishi et al (U.S. 5,462,806) and Soane et al (U.S. 5,733,483) as applied to claim 41 above, and further in view of Singh et al (U.S. 5,204,126).

Mase et al as modified above is silent as to the mould surface includes mold release agent in the form of a silane or fluorochemical treatment. However, providing mold with release agent by treating the surface with silane or fluorochemical is well known and conventional as shown for example by Singh et al. Singh et al discloses method of forming an ultra thin release films on the mold surfaces. The method includes forming a film with fluorinated alkyl group or silane or siloxane onto the surface of the mold surface, (Col 4, lines 48-59) and the film has a thickness of not more than 0.5 μm or not more than 10 nm. (Col 7, lines 23-30)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide very thin silane or fluorochemical film as a release agent

to the mold surface as disclosed by Singh et al in the method of Mase et al as modified by combination of references to allow the casting of the optical lenses to be easily release from the surface of the mold without damaging the lens. (Col 1, lines 50-55)

7. Claims 99-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mase et al (U.S. 5,693,366) in view of Konishi et al (U.S. 5,462,806) and Soane et al (U.S. 5,733,483) as applied to claim 41 above, and further in view of Takamizawa et al (U.S. 5,096,626).

Mase et al as modified above is silent as to the anti-reflection layers includes stack of layers with a cumulative thickness ranged from 0.5 μm to 20 μm or 1.5 μm to 5 μm with alternate high and low refractive index layers. However, providing anti-reflection layers as a multi-layers with a cumulative thickness ranged from 0.5 μm to 20 μm or 1.5 μm to 5 μm with alternate high and low refractive index layers on the first and second coating layers is well known and conventional as shown for example by Takamizawa et al. Takamizawa et al discloses forming anti-reflecting film as multi-layers having different indices of refraction varied in the direction of the thickness film and the thickness of the film can be adjusted by selection of a solvent or a coating method, which is considered to be any desired thickness and includes 0.5 μm to 20 μm or 1.5 μm to 5 μm. (Col 6, lines 23-37)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide anti-reflecting film as multi-layers having different indices of refraction varied in the direction of the thickness film and the thickness of the film can be adjusted by selection of a solvent or a coating method, which is considered to be any

desired thickness and includes 0.5 μm to 20 μm or 1.5 μm to 5 μm as disclosed by Takamizawa et al in the method of Mase et al as modified by combination of references to provide hard coat film and anti-reflecting film with excellent adhesion between the lens and film with no defects. (Col 2, lines 5-13)

Response to Arguments

8. Applicant's arguments with respect to claims 41-57 and 81-106 have been considered but are moot in view of the new ground(s) of rejection with an additional reference of Konishi et al (U.S. 5,462,806).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sing P. Chan whose telephone number is 571-272-1225. The examiner can normally be reached on Monday-Thursday 7:30AM-11:00AM and 12:00PM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher A. Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chan Amy Po

SPC

CHRIS FIORILLA
SUPERVISORY PATENT EXAMINER
AU 1734